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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,069	11/14/2001	Chun-Hung Kung	TS01-809	7210

28112 7590 07/21/2003

GEORGE O. SAILE & ASSOCIATES
28 DAVIS AVENUE
POUGHKEEPSIE, NY 12603

EXAMINER

ROSASCO, STEPHEN D

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 07/21/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,069	KUNG, CHUN-HUNG	
	Examiner	Art Unit	
	Stephen Rosasco	1756	

-- Th MAILING DATE of this communication app ars on th cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

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Detailed Action

The disclosure is objected to because of the following informalities: there are numerous spelling and grammatical errors present, e.g., page 2, line 6, "devices features", line 14, "shifting mask is alternately counteracted"; page 15, last paragraph first line, "photoresist can it this".

On page 4 the reference designations for 5,965,303 and 5,432,484 were incorrect, and were corrected by the examiner.

Appropriate correction is required.

Claims 1 and 14 recites the limitation "removing Ga stain" in last paragraph. There is insufficient antecedent basis for this limitation in the claim.

There is no indication of whether the Ga stain came from the repair process or was there initially.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Grenon et al. (6,165,649).

The claimed invention is directed to a method of repairing a phase shift mask, comprising the steps of creating a layer of protective semiconductor material over the

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surface of the patterned phase shifter material, repairing a faulty element in the mask and then removing the protective layer.

Grenon et al. teach a coating is used that protects the mask during subsequent repair steps, such as etching, laser ablating, focused ion beam sputtering, laser deposition, or focused ion beam deposition. The coating may be a polymer, such as photoresist, a metal, such as copper, or a material, such as carbon that can be etched selective to mask materials, including chrome lines, quartz, and attenuator. The coating may be deposited on or under chrome lines of the mask.

Grenon et al. also teach the use of plasma etch to remove bump defects.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grenon et al. (6,165,649) in view of the disclosed prior art.

The claimed invention is directed to a method of repairing a phase shift mask, comprising the steps of creating a layer of protective semiconductor material over the surface of the patterned phase shifter material, repairing a faulty element in the mask and then removing the protective layer.

Grenon et al. teach a coating is used that protects the mask during subsequent repair steps, such as etching, laser ablating, focused ion beam sputtering, laser deposition, or focused ion beam deposition. The coating may be a polymer, such as photoresist, a metal, such as copper, or a material, such as carbon that can be etched

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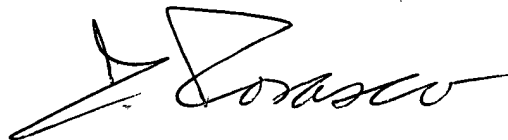
selective to mask materials, including chrome lines, quartz, and attenuator. The coating may be deposited on or under chrome lines of the mask.

Grenon et al. also teach the use of plasma etch to remove bump defects.

The teachings of Grenon et al. differ from those of the applicant in that the applicant teaches additional standard processing steps with specific performance parameters to the plasma processing and then baking the photoresist. However, these would all be within the range of standard mask processing and would be dependent on the specific application. Therefore, it would have been obvious to one having ordinary skill in the art to take the teachings of Grenon et al. and combine them with the teachings of the disclosed prior art and adjust the processing parameters in order to make the claimed invention because one would know that the processing parameters must be adjusted to meet a specific application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Rosasco whose telephone number is (703) 308-4402.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661. Fax (703) 872-9310 Before Finals; 872-9311 After Finals.

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized, sweeping flourish extending from the end of the name.

S. Rosasco
Primary Examiner
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S. Rosasco
7/14/03